

EXHIBIT 93

REDACTED

HIGHLY CONFIDENTIAL – SUBJECT TO PROTECTIVE ORDER

**IN THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF VIRGINIA
ALEXANDRIA DIVISION**

United States of America, *et al.*,

Plaintiffs,

v

Google LLC,

Defendant.

Case No. 1:23-cv-00108

HON. LEONIE H. M. BRINKEMA

**EXPERT REBUTTAL REPORT OF
TIMOTHY SIMCOE, PH.D.**

FEBRUARY 13, 2024

others are more price sensitive (e.g., because they can commute by bicycle rather than car). If a gas tax is introduced, and the retail price rises from \$1.00 per gallon to \$1.10 per gallon, while the gas station's revenue falls to \$0.90 per gallon, then 50 percent of the tax incidence falls on sellers and 50 percent on buyers, regardless of whether an individual buyer is more or less price sensitive.³⁶ Ultimately, the price sensitivity of each gasoline buyer will contribute to determine the gasoline price after a tax is introduced, but the price that each of those individuals faces is the same market price for all gasoline buyers.

30. As for the question of whether and how to group individual advertisers for the purpose of estimating the demand elasticity, it is not uncommon for economists to estimate a demand curve for a group of products that are reasonable substitutes. Economists regularly estimate supply and demand curves from heterogeneous groups of buyers and sellers, and standard economics textbooks explain how this is done.³⁷ Thus, while it is possible to study heterogeneity in tax incidence—between gas stations for example—that does not prevent economists from estimating aggregate supply and demand elasticities and using those estimates to measure the average incidence of a tax.³⁸
31. Prof. Lee shows that ad exchanges used to transact open web display ad impressions are substitutes, and that open web display advertising is distinct from other types of display advertising.³⁹ Although Google's experts claim other types of digital advertising are interchangeable with open web display advertising, none of them claim or suggest open web display ad impressions should be further segmented based on the types of advertisers who purchase them.⁴⁰ Therefore, the key question in this case is not whether the FAAs resemble other advertisers, but rather whether the FAAs purchase similar impressions to other advertisers.

³⁶ As explained in my Initial Report, an overcharge analysis holds quantities fixed at the as-is level. *See* Simcoe Initial Report, Section IV., ¶ 128.

³⁷ Dennis W. Carlton and Jeffrey M. Perloff, *Modern Industrial Organization*, 4th ed. (Pearson: Essex, 2015), 85–88; *see also*, Judith Chevalier and Austan Goolsbee, “Are Durable Goods Consumers Forward-Looking? Evidence From College Textbooks,” *The Quarterly Journal of Economics* 124, no. 4 (2009): 1853–1884.

³⁸ Justin Marion and Erich Muehlegger, “Fuel tax incidence and supply conditions,” *Journal of Public Economics* 95, no. 9–10 (2011): 1202–1212.

³⁹ *See* Lee Initial Report, Section II.B.3.; *see also*, Lee Initial Report, Section IV.B.

⁴⁰ *See* Israel Report, Sections IV.C.2 and IV.C.3.

V.B. FAAs Purchase Similar Impressions to Other AdX Advertisers

32. My Initial Report explained that online advertisers, including FAAs, purchase a variety of ads, at a variety of prices, from a variety of publishers.⁴¹ Advertisers develop ad campaigns and set advertising budgets that will be used to purchase many individual ad impressions, and these impressions—though part of the same ad campaign—are likely to sell at many different prices, and to different types of publishers.⁴² The fact that FAAs are different from some other advertisers in some ways, such as the number of impressions they purchase, does not necessarily mean that the average elasticity of supply and demand for FAA purchases is different from the rest of the marketplace. Even within one advertiser, the target audience, budget, and objectives of an advertising campaign can be diverse,⁴³ and advertisers run multiple advertising campaigns simultaneously.⁴⁴
33. Throughout her Expert Report, Prof. Chevalier asserts that my exchange-level model is inappropriate for developing an FAA overcharge model because, she claims, FAAs “focus their

⁴¹ An invoice to the Army shows several transactions between the Army and other media advertisers. *See* ARMY-ADS-0000539998, at -007 (04/13/2022) (For Reddit Ads, the invoice shows one transaction, “Campaign: US Army_Compo 2_Q1 2022[,] Client Name: US Army[,] Subreddit Target: Subreddit + Interest[,] Impressions: 1” for an “Amount[:] \$2,608.79”) and at -009 (For LinkedIn, the invoice shows two transactions, “Dynamic Ads – Spotlight Ads and Follow Ads” and “Sponsored Content – Customer Managed” for a total amount “1,360.22”) and at -011 (For Twitter, the invoice shows one transaction, “Promoted Ads,” for an “Amount[:] 7,954.41”). An invoice to the Navy shows several transactions between the Navy and other media advertisers. *See* NAVY-ADS-0000373387, at -398–399 (10/19/2022) (For Microsoft, the invoice shows many transactions, such as “Aviator_Brand_BMM,” “Careers_DSA_High Demand,” “Medicine_Non-Brand_EXM,” and “RLSA_General Terms_Brand_Spanish_EXM” for a “Total amount (USD) [of] 70,212.96”) and at -401–402 (For Snap Inc., the invoice shows many transactions, such as “July-August Engagement Lens – Periscope,” “July-August Always on – Lead Gen,” and “July-August Always-on Website Traffic – Collection Ads” for a total amount of “\$338,969.48”).

⁴² *See* Lee Initial Report, Section IV.C., ¶¶ 315–317; *see also*, “Media-Buying Methods: Programmatic, Real-Time Bidding (RTB), Header Bidding, and PMP,” *The AdTech Book* by Clearcode, accessed January 31, 2024, <https://adtechbook.clearcode.cc/media-buying-methods/> (“Originally designed to help publishers sell remnant inventory to advertisers, RTB is now used to sell all types of inventory, including premium inventory. Instead of buying thousands of impressions from the same publisher, RTB allows advertisers to purchase individual impressions across multiple publishers to reach their target audience more precisely and bid based on the information known about the website and user at that particular time. Publishers also benefit by receiving higher CPMs for their inventory.”).

⁴³ “What Are Digital Marketing Goals and Objectives?” Wrike, accessed February 11, 2024, <https://www.wrike.com/digital-marketing-guide/faq/what-are-digital-marketing-goals-objectives/>.

⁴⁴ “Create and Manage More Than One Campaign,” Google Ads Help, accessed February 11, 2024, <https://support.google.com/google-ads/answer/1722093>.

advertising on U.S. internet users.”⁴⁵ However, for many advertisers, US and non-US impressions are reasonable substitutes. For example, an FAA might view the end user location as the most salient characteristic of an impression, but another bidder might care far more about the end user’s browsing history. FAAs bid against other advertisers who purchase impressions worldwide, and if US and non-US impressions are substitutable in those advertisers’ view, it will be reflected in the elasticity of demand, and therefore the price of the impression.⁴⁶

34. Figures 24, 25, and 26 in Prof. Chevalier’s Expert Report compare the average cost per thousand impressions (CPM), click-through rate (CTR), and cost-per-click (CPC) of impressions purchased by FAAs to an average for all advertisers.⁴⁷ Two of these metrics are not actually characteristics of an impression that can be compared across FAAs and other advertisers to assess whether they purchase different types of impressions. In particular, both CTR and CPC measure the end user’s response to the media and the advertiser. Thus, even if the distribution of impressions purchased by FAA and non-FAA advertisers were identical, these two metrics could differ because users are more likely to click on advertisements displayed by non-FAA advertisers than by FAA advertisers.
35. With respect to CPMs, Prof. Chevalier’s Figure 24 indicates that there is a 27.1 percent difference between the average CPM for impressions purchased by the FAAs (excluding the Navy) and all US Advertisers.⁴⁸ Although she asserts elsewhere in her report that it is necessary to compare these differences to some measure of variability, Prof. Chevalier does not provide any indication of the degree of variability of the average CPM within each group.⁴⁹ I have performed my own calculations that show the difference in average CPM between FAA and all

⁴⁵ See Chevalier Report, Section V.A.1., ¶ 67 (“Given that Plaintiffs seek damages on behalf of the FAAs, which largely focuses their advertising on U.S. internet users, the choice to focus on worldwide data exclusively is puzzling.”).

⁴⁶ For example, if the price of non-US impressions decreased, this would cause non-FAA advertisers to win these impressions at lower prices, putting downward pressure on the prices of US impressions.

⁴⁷ For each of these statistics, Prof. Chevalier purports to calculate the averages across these metrics between January 2019 and January 2023 for seven FAAs individually; for FAAs collectively, excluding the Navy; and for all advertisers. See Chevalier Report, Section V.B.1.a.

⁴⁸ $27.1\% = (\$2.14 - \$1.63) \div ((\$2.14 + \$1.63) \div 2)$.

⁴⁹ See Figure 14 in Appendix D.2. See also, Chevalier Report, Section V.A.2.c.

advertiser purchases is only 0.09 of the standard deviation in CPMs for all advertisers.⁵⁰ This difference is “small” by Prof. Chevalier’s standard, and indicates that there is substantial overlap in the distribution of impression prices between FAAs and all other advertisers.⁵¹

36. Because advertiser similarity does not influence the elasticity of demand or supply for open web display impressions, Figures 22 and 23 in Prof. Chevalier’s Expert Report are irrelevant to the question of whether an exchange-level model is appropriate for estimating AdX’s overcharge. Figures 22 and 23 in Prof. Chevalier’s Expert Report are also biased because she does not have data that would allow her to aggregate all of the anonymized advertiser IDs that correspond to the same advertiser.

V.C. Prof. Chevalier Overstates the Variance in Advertiser-Specific Elasticity

37. Figures 28 and 29 in Prof. Chevalier’s Expert Report purport to show that the demand elasticities she estimates for certain anonymized advertiser IDs differ from the exchange-level demand elasticity estimates contained in my Initial Report.⁵² She relies on this analysis to opine that my exchange-level analysis is incorrect, and that “markets” should be defined narrowly based on a very small number of auctions.⁵³ In addition to my conceptual disagreements with Prof. Chevalier’s decision to estimate advertiser-specific elasticities, I also conclude that flaws in her analysis caused those estimates to be incorrect.

⁵⁰ $0.09 = (\$2.10 - \$1.91) \div \$2.14$.

My calculation is conservative because it is based on an underestimate of the true standard deviation of the impression price. Because I do not have impression-level data, I calculated the standard deviation using data that was aggregated to the level of the advertisement, as Prof. Chevalier has done. This aggregation reduces the estimated standard deviation. *See* George Casella and Roger L. Berger, *Statistical Inference*, 2nd ed. (Cengage Learning, 2002) Section 11.2.6 Partitioning Sums of Squares. *See also*, Figure 14.

⁵¹ *See* Figure 14 in Appendix E.2. The figure reports Prof. Chevalier’s calculation of the mean and standard deviation of CPM, CPC, and CTR for all advertisers included in the figure. I then adjusted Prof. Chevalier’s code to calculate the same values across FAAs. *See* Chevalier Report Backup, xbridge_output_2.xlsx and 3. XBridge Analysis.py.

⁵² *See* Chevalier Report, Section V.B.1.b.

⁵³ This conclusion also disagrees with Prof. Israel, who finds that impressions are substitutable not only across advertisers purchasing open web display advertisements through ad tech tools, but also ad impressions on social media platforms, in-stream video ads, mobile ads, and search ads. *See* Israel Report, Section III.C.

47. In this section, I explain in turn why each of these claims is inappropriate. First, however, it is useful to reiterate the conceptual basis for my Comparables Approach, as explained in my Initial Report.⁷⁰
48. The Comparables Approach selects an appropriate set of *transactions* and uses the average price of those transactions as a benchmark. The comparables used in my Initial Report are all open web display advertising transactions on non-AdX ad exchanges. Because I do not have access to impression-level data, I compute the *market-wide average* take rate as a revenue-weighted average of the take rates for transactions on all non-AdX ad exchanges that produced usable data.⁷¹
49. Many of Prof. Chevalier's critiques of my Comparables Approach appear to be based on the mistaken view that I have selected a set of comparable *exchanges*, rather than comparable transactions. That is incorrect. I did not include transactions in my analysis on the basis of comparing exchanges. Nor do I assume that all non-AdX exchanges are identical. The key assumption of the Comparables Approach is that *after pooling* all of the transactions sold by non-AdX exchanges (which were not accused of any exclusionary conduct) the market-wide average take rate is a conservative estimate of the but-for AdX take rate.⁷²

VI.A.1. Prof. Chevalier's Opinions Do Not Undermine the Validity of my Comparables Approach

50. This section explains how my Comparables Approach is based upon well-accepted economic methods and principles. I first explain why my approach produces a reliable, albeit conservative, estimate of the but-for take rate. I then demonstrate that my comparable but-for take rate is robust to small changes in assumptions.

⁷⁰ See Simcoe Initial Report, Section IV.A.1.

⁷¹ My Initial Report explained how it is possible to calculate the weighted average using aggregated exchange-level data, even if the impression level data are not available. See Simcoe Initial Report, Section IV.A.1., FN 195.

⁷² See Simcoe Initial Report, Section IV.A.1., ¶¶ 143–148.

51. In Section V.A.2.a of her Expert Report, Prof. Chevalier states that my weighted average take rate is not a credible benchmark, stating, “I am unaware of standards in the field for estimating damages using a benchmark of lower average prices calculated across a handful of competitors in an allegedly monopolized market.”⁷³ She further claims that the sources cited in my Initial Report do not support my Comparables Approach.⁷⁴ Prof. Chevalier cites to an article that describes two approaches to identifying comparables: the “benchmark” approach and “yardstick” approach. The article she quotes states that the “yardstick approach” typically compares prices in a monopolized antitrust market to prices in a non-monopolized market. This approach relies on an assumption that the non-monopolized reference market is sufficiently comparable to the monopolized market that meaningful differences in prices can be reasonably attributed to the alleged antitrust violation. Academics and antitrust authorities have noted that, although the yardstick approach typically relies on a comparison between markets, one could also use inter-firm comparisons when more disaggregated data is available.⁷⁵
52. A strength of my approach is that it does not rely on selecting a non-monopolized reference market, but rather, it examines the prices levied on transactions in the same market as the monopolist. Thus, in terms of comparability, my market is the best possible reference market because it eliminates any potential for unobserved differences between the monopolized market and the reference market that could possibly explain the price differences between those markets. However, my approach is very likely to be conservative in the sense that the estimated but-for take rate is higher than the take rate that AdX would actually charge in the but-for world. This is

⁷³ See Chevalier Report, Section V.A.2.a., ¶ 71.

⁷⁴ See Chevalier Report, Section V.A.2.a., FN 156 (“Neither of sources cited by Prof. Simcoe in ¶ 137 n. 189 of his report describe antitrust contexts in which a benchmarking such as Prof. Simcoe’s was used.”)

⁷⁵ Raphaël De Coninck, “Estimating Private Antitrust Damages,” *Law & Economics*, Concurrences No 2010-1: 39-43, FN 11 (“This article refers to comparisons across and within ‘markets’ for ease of exposition; the same exercises can be carried out at a more disaggregated level if appropriate data is available, e.g. comparing data of affected and otherwise similar unaffected firms, or of affected firms during the infringement and non-infringement period.”); see also, “Practical Guide for Quantifying Harm in Actions for Damages Based on Breaches of Article 101 or 102 of the Treaty of the Functioning of the European Union,” European Commission, November 6, 2013, FN 29 (“The comparison with firm-level data of another company could, theoretically, be made not only for companies that operate in another geographic or product market as discussed in Sections 2-4 below, but also for data of companies operating in the same product and geographic market as the injured party. In practice, such intra-market comparisons do not play a significant role, possibly because within the same market it can be difficult to find a sufficiently comparable other company that was not affected by the infringement.”).

because Google’s conduct could influence the prices charged by other firms in the same market. As I explained in my Initial Report and in Section III above, if anything, Google’s supracompetitive fees would cause the comparable firms I analyze to charge higher take rates relative to the but-for world with greater competition—a point with which Prof. Chevalier does not appear to disagree.⁷⁶ Intuitively, when a firm with significant market power charges a supracompetitive price, other fringe firms also have incentives to set their prices above a competitive level in response. In summary, my Comparables Analysis is a “yardstick” approach that produces conservative estimates of the but-for take rate.

53. The article cited to by Prof. Chevalier describes the other type of comparable, benchmarks, as follows: “[b]enchmarks are comparisons against the same market, either before or after the violation occurred[.]”⁷⁷ Given the long period of time during which Google’s exclusionary conduct took place, and the fact that its conduct is ongoing, I do not have access to data that would allow me to implement the benchmark approach. However, my Event Study Approach is similar to the “difference in differences” approach described in the cited article in that it compares Google to other firms, before and after the implementation of UPR.⁷⁸ The Event Study approach has the added benefit of using exchange “fixed effects” to control for any unmeasured quality differences that may exist between exchanges.⁷⁹ Notably, my Comparables Approach and Event Study Approach yield very similar estimates of the but-for take rate.⁸⁰
54. In performing my Comparables Analysis, I relied on the data produced in this case to form my conclusions. In particular, I calculated the but-for take rate using data from every exchange that produced data sufficient to calculate a take rate for worldwide impressions within the relevant antitrust market defined by Prof. Lee, of which 8 provided the information necessary to compute

⁷⁶ See Section III.

⁷⁷ See Chevalier Report, Section V.A.2.a., FN 156.

⁷⁸ Unlike the difference-in-differences methodology, my Event Study Approach does not assume that non-AdX exchanges provide an unbiased estimate of the counterfactual change in impression shares for AdX, given that shares of all exchanges in the relevant market are simultaneously determined.

⁷⁹ See Simcoe Initial Report, Section V.A.2., ¶ 229.

⁸⁰ See Simcoe Initial Report, Figure 22. Likewise, my Event Study analysis is conservative, since it analyzes only one piece of Google’s at-issue conduct, UPR. See Simcoe Initial Report, Section IV.A.2.

a take rate for impressions associated with the relevant market.⁸¹ The exchange data included in my Comparables Analysis collectively constitute 81 percent of impressions transacted through ad exchanges. In other words, my Comparables Analysis is based on data covering the large majority of transactions associated with the ad exchange market.⁸²

55. To be clear, the fact that my Comparables Analysis produces a take rate that is lower than AdX's as-is take rate is an *outcome* of my approach and not a pre-condition for selecting the set of transactions to include in my calculations.⁸³ As I explained in my Initial Report, and in Section VI.A above, I first identified the following characteristics of transactions in the data useful for estimating a relevant but-for take rate: open web display advertising transactions displayed to worldwide users.⁸⁴ I subsequently selected transactions where an advertiser pays an ad exchange other than AdX for an impression matching these characteristics.⁸⁵ Only after selecting the comparable transactions (and associated take rates) did I calculate the but-for take rate.⁸⁶
56. Nevertheless, to illustrate that the results of my Comparables Analysis are robust to excluding impressions associated with any particular exchange, I have re-estimated AdX's but-for take rate by separately excluding impressions associated with each exchange included in my dataset one at a time.⁸⁷ The results are shown in Figure 3 below. In Figure 3, Column [A] identifies the exchange data excluded from each calculation. Columns [B] and [C] show my estimated but-for take rate when including all remaining third-party exchange impressions or only the remaining large third-party exchange impressions, respectively. Xandr and Yieldmo are the only exchange

⁸¹ I excluded AdSense from my aggregate exchange-level panel because its transactions likely do not serve as reasonable comparables given that it is a Google product in the same antitrust market defined by Prof. Lee as AdX. *See* Simcoe Initial Report, Appendix C.2., ¶ 275; *see also*, Lee Initial Report, Section IV; *see also*, MSFT-LIT-0000002971 (11/19/2019); *see also*, EQUATIV-000000091 (6/24/2023).

⁸² *See* Lee Initial Report, Figure 47.

⁸³ *See* Simcoe Initial Report, Sections IV.A.1. and V.A.1. All of the exchanges whose transactions I included in my analysis of large third parties have also been identified by both third parties and Google itself as competitors to AdX. *See* GOOG-DOJ-03901903, at -918 (11/29/2018); *see also*, GOOG-DOJ-09183195, at -206 (02/10/2020).

⁸⁴ *See* Simcoe Initial Report, Section IV.A.1.a., ¶ 139.

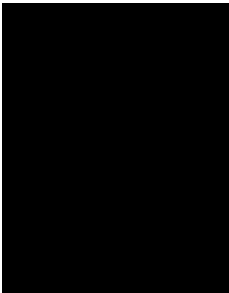
⁸⁵ *See* Simcoe Initial Report, Section IV.A.1.a., ¶ 140.

⁸⁶ *See* Simcoe Initial Report, Section IV.A.1.a., ¶¶ 141–143.




⁸⁷ *See* Chevalier Report, Section V.A.2.f. This analysis demonstrates that, despite Prof. Chevalier's claims, my Comparables Analysis does not result in "[s]ubstantially [l]ower or [z]ero [d]amages" under "[r]easonable [a]djustments."


datasets whose exclusion impacts the estimated but-for take rate by more than 0.5 percentage points.⁸⁸ Similarly, when performing my Comparables Analysis using only the large third-party exchange data, Pubmatic and Xandr are the only exchange datasets whose removal impacts the estimated but-for take rate by more than 0.5 percentage points.

FIGURE 3: COMPARABLES BUT-FOR TAKE RATE ESTIMATES EXCLUDING ONE THIRD-PARTY EXCHANGE, WORLDWIDE IMPRESSIONS

Excluded Exchange [A]	All Third Parties [B]	Large Third Parties [C]
Simcoe Initial Report	16.2%	15.6%
	16.1%	15.4%
	16.1%	15.2%
	16.0%	15.3%
	15.7%	14.9%
	16.2%	-
	17.9%	17.3%
	15.7%	-

Source: Brattle analysis of aggregate exchange-level panel. *See* Simcoe Comparables Workpaper. *See also*, Simcoe Initial Report, Figure 15.

Notes: 






57. Figure 3 also illustrates how the analyses that Prof. Chevalier performs in Section V.A.2 of her report rely on a cherry-picked set of comparable transactions (i.e., by dropping “outlier” exchanges). Removing impressions won by Pubmatic or Yieldmo from the analysis causes the

⁸⁸ As explained in my Initial Report, I include transactions associated with Index Exchange, Magnite, OpenX, Pubmatic, Sovrn, Xandr, and Yieldmo in my Comparables Analysis of “All Third Parties.” I include transactions associated with Index Exchange, Magnite, OpenX, Pubmatic, and Xandr in my Comparables Analysis of “Large Third Parties.” *See* Simcoe Initial Report, Section V.A.1., Figure 15 and Appendix C.2.